

All the fog recorded for this area, with very few exceptions, begins between 2 and 7 in the morning. When the sky is overcast and the humidity is high for several hours, or when the area is subjected to several days of moderate rains, fog may be expected to form during the afternoon and evenings.

During the summer most of the fog is of the radiation type. This type, though also occurring in the winter is most frequent during the spring and in the fall. During clear cool nights when the pressure is steady and the wind light in any direction from south through east to north, fogs are likely to form. If there has been a rainy period of several days they are extremely likely to occur. These fogs generally dissipate soon after sunrise. If there is a cloud covering, dissipation is much slower and the fog may last several hours after sunrise. If the temperature conditions are unfavorable for dissipation, the fog will continue until a decrease in pressure forces it to lift, after

which it often remains as low stratus or strato-cumulus clouds.

The surface wind here is westerly a very small percentage of the time and there are but few fogs recorded as then forming. In practically all cases a shift of the wind during fog to a westerly direction has brought about dissipation. It is believed that this dissipation is largely due to warm dry air from the semiarid prairie country to the southwest, west, and northwest. During the late fall, winter, and early spring, fog may be expected to dissipate before 1 o'clock in the afternoon, while during late spring, summer, and early fall, dissipation will usually occur before 9 in the morning. Under most conditions fogs dissipate with rapid rises in temperature and pressure, however, convection currents cause it to lift and warm dry westerly winds reduce the humidity to such an extent that the fog dissipates.

RAIN-BEARING WINDS OF CENTRAL OKLAHOMA

By PERRY O. EPPERLY

[Weather Bureau, Oklahoma City, Okla., October 1933]

A study of the relation of the rain-bearing winds of central Oklahoma to the prevailing direction of the wind for this area indicates that the wind of rain periods has little relation to the prevailing direction of the surface wind.

During the entire year except February, the prevailing direction of the surface wind is south, however, during late fall, winter, and early spring the wind is north much of the time. In January the percentage of north winds is only slightly below that of winds from the south, while during February they are equal. Through spring and summer the wind is increasingly from the south and reaches a maximum in September. The percentage of westerly winds is slightly larger during the late fall, winter, and early spring than during the summer. During the late spring, summer, and early fall easterly winds, especially northeast and southeast have their greatest percentage.

Although the prevailing direction of the surface wind is south the wind during rain periods is north from September through January to March, equally divided between north and south in April and May, northeast during June and July, and equally divided between north and southeast in August. During April and May rains the wind almost always shifts from south to north and during June and July rains from south to northeast. This is the period of the greatest frequency of thunderstorm development, which accounts for the shift of the wind to the northerly directions. Through the winter months this change of direction during rain periods takes place along the wind-shift line of the numerous low-pressure areas that move over this section of the State.

Thunderstorm development in the winter months is slight; however, an occasional storm is reported in connection with a violent wind shift. From December to February the percentage of rains with thunderstorms is small. From February to May it reaches 68, and in June 80. It then decreases to 71 in September, 51 in October, and 24 in November. The prevailing direction of the upper air for this section is from southwest to northwest during the entire year. Consequently the majority of the thunderstorms occurring at this station move in from these directions.

The prevailing south winds of this area come largely from the subtropical high-pressure area to the south and from anticyclonic systems when they are centered over the southeastern portion of the United States. When these winds blow over the Gulf of Mexico they bring in warm damp air to this section both at the surface and aloft. When this warm damp air associated with the eastern half of a disturbance is underrun by cool air from the northwest and north, showers and thunderstorms occur. When, instead of southerly winds from the Gulf, the air comes as southwest winds from the semiarid desert country, low clouds and fog are dissipated and there is not sufficient moisture present to produce more than widely-scattered precipitation, even when there are underrunning currents of cold air from the northwest. However, when the winds are from the northeast and east, giving cold air near the surface, and they are over-run by south or south-southwest warm, moist air from the Gulf, general precipitation takes place.

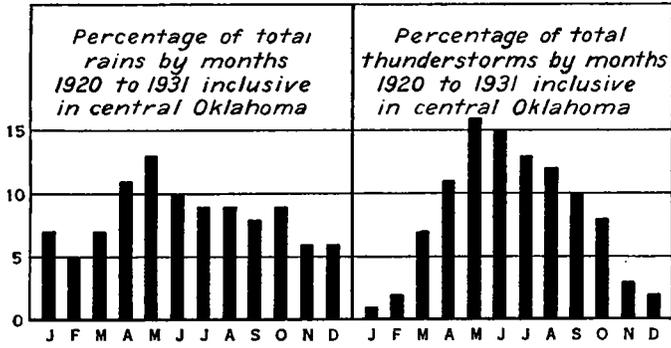


FIGURE 1.

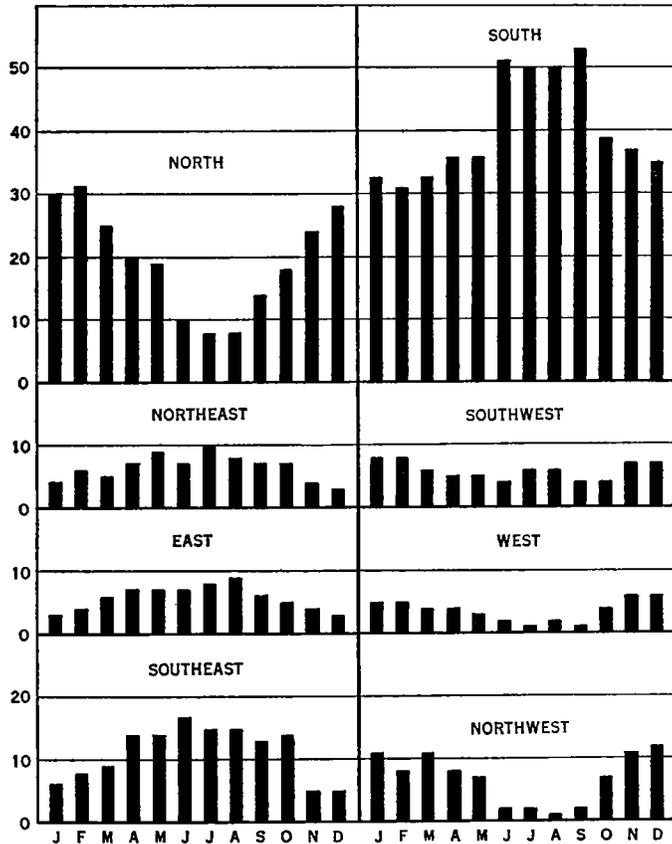


FIGURE 2.

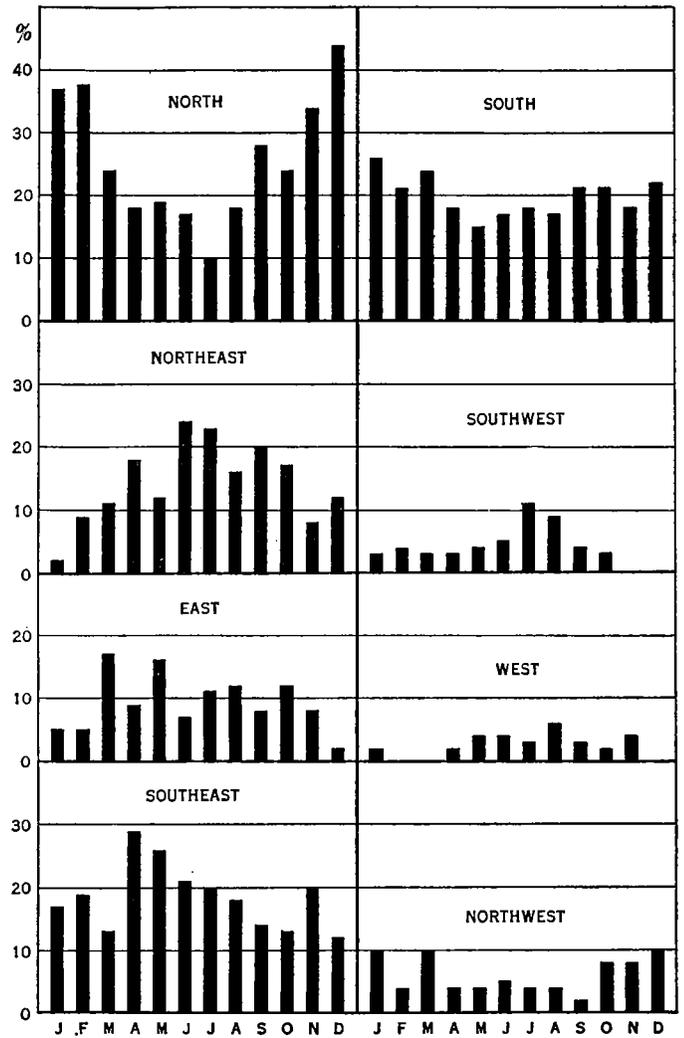


FIGURE 3.

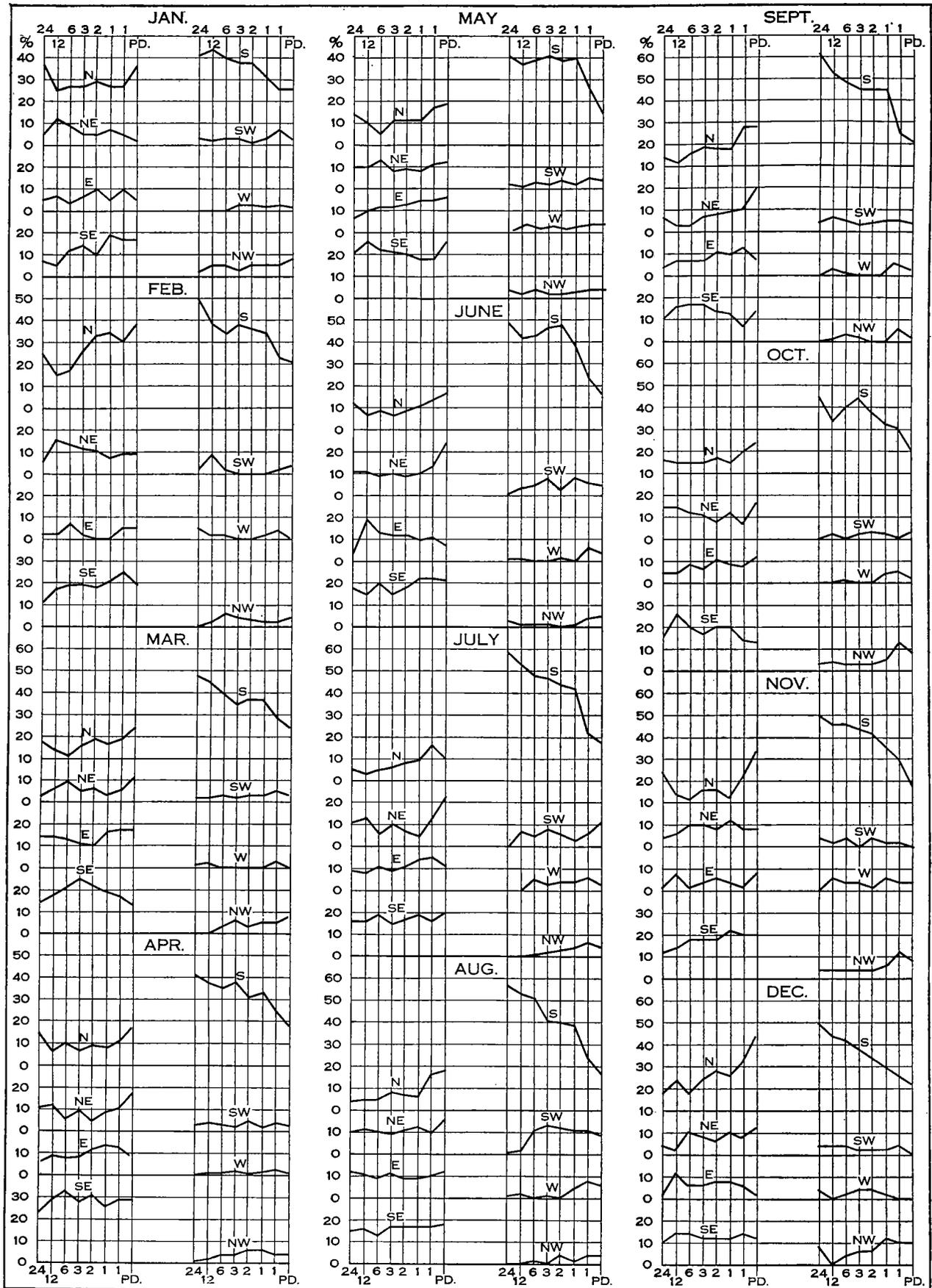


FIGURE 4.—Percentage of time that wind blew from the different directions 24, 12, 6, 3, 2, and 1 hour preceding, the hour of beginning, and during the rain, for each of the 12 months, 1920-31, inclusive, in central Oklahoma.